Teacher Prep

Each group of students will need eight 1/8 apple slices. (1 whole apple per group)

- Use a sharp knife to cut an apple evenly into eight pieces.
- To do this:
  - Cut the apple in half
  - Cut each of these pieces in half so you have fourths
  - Cut each of the fourths in half so you have eighths

Mummification

Mummification is a process that preserves things that were once living. People in Ancient Egypt believed that if they could preserve a person's body, that they would live on in the afterlife.

- Mummification is performed on organisms that are no longer alive.
- The dead organism is placed into a container with chemicals that absorb moisture, called desiccants.
- The chemical that Ancient Egyptians used is called Natron. It's composed of sodium carbonate, baking soda, and salt.
- When the chemical is applied, all of the moisture is removed from the organism. This causes the organism to shrink in size and turn dark in color.

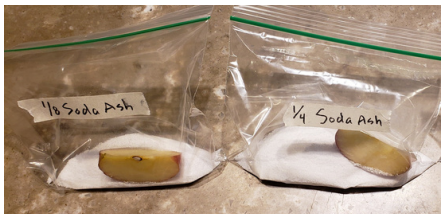
Experiment Set Up

Follow the instructions to figure out which chemical mixture is best for mummification.

Experiment Set-Up:

- Use a permanent marker to label your baggies.
  - Baggie #1: Negative Control
  - Baggie #2: Positive Control
  - Baggie #3: Soda Ash 1
  - Baggie #4: Soda Ash 2
  - Baggie #5: Baking Soda 1
  - Baggie #6: Baking Soda 2
  - Baggie #7: Salt 1
  - Baggie #8: Salt 2
- Add a slice of apple to each bag.

- Add chemicals to the bags as follows:
  - Control: None (empty)
  - Positive Control:
    - Add 1/8 cup soda ash
    - 1/8 cup baking soda
    - 1/8 cup salt
  - Soda Ash 1: Add 1/8 cup soda ash
  - Soda Ash 2: Add 1/4 cup soda ash
  - Baking Soda 1: Add 1/8 cup baking soda
  - Baking Soda 2: add 1/4 cup baking soda
  - Salt 1: Add 1/8 cup salt
  - Salt 2: Add 1/4 cup salt



- Seal the bag. Do not squeeze extra air out of the bag before you seal it.
- Gently shake each bag so that the apple is coated with the chemical in the bag.
- Leave as much of the chemical on top of each slice as possible.
- Ask your teacher where a safe spot for your bags would be. They need to sit undisturbed for at least five days.

STEM CAREER ADVENTURES

Making Observations

- Take each apple slice out of the chemical and brush off as much chemical as possible with a dry paper towel. (Don't rinse them off, just brush them off with a paper towel)
- Look at each of the slices and compare them to the negative and positive control. Write your observations in the chart below. Describe the size and color of the apple.
- Look at the chemical in the bag. How has it changed since the beginning of this test? Write your observations in the chart below. Describe how the chemical has changed, for example is it damp, hard or lumpy?
- Answer the question at the bottom of the page.

	Size of Apple	Color of Apple	What do the Chemicals look like?
Negative Control			
Positive Control			
Soda Ash 1			
Soda Ash 2			
Baking Soda 1			
Baking Soda 2			
Salt 1			
Salt 2			

Which apple had the most amount of moisture removed?

STEM CAREER ADVENTURES

Teacher Key

	Size of Apple	Color of Apple	What do the Chemicals look like?
Negative Control	no change	brown spots	n/a (no chemicals added)
Positive Control	apple and apple peel are shrunk more than any of the others, wrinkled and dry	apple is very brown, peel is very dark	part of chemical hard and formed one solid piece with a little bit of brown coloring, part of chemical hasn't changed
Soda Ash 1	apple and apple peel are shrunk, wrinkled and wet	apple is very brown, peel is very dark	chemical is brown, hard and lumpy
Soda Ash 2	apple and apple peel are shrunk more than all except - control, wrinkled and wet	apple is very brown, peel is very dark	part of chemical brown, hard and lumpy, part of chemical hasn't changed
Baking Soda 1	apple and apple peel are shrunk a little	apple is a little brown, peel is dark at edges	chemical is wet and mushy
Baking Soda 2	apple and apple peel are shrunk a little more than 1/8 baking soda	apple is a little more brown, peel is a little darker at edges than 1/8 baking soda	chemical is dry with easy to break clumps
Salt 1	size of apple and apple peal have not changed	color of apple and apple peal have not changed	chemical is wet and mushy
Salt 2	apple has shrunk a little, apple peel has not changed	color of apple and apple peal have not changed	chemical is moist

Which apple had the most amount of moisture removed?

The apple with natron (the positive control).